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NATIONAL RECOVERY ADMINISTRATION

RESEARCH AND PLANNING DIVISION

EVIDENCE STUDY

NO. I
c

THE AUTOMOBILE MANUFACTURING INDUSTRY

Prepared by

FRANK EVANS, Jr.

September, 1935

PRELIMINARY DRAFT

(NOT FOR RELEASE: FOR USE IN DIVISION ONLY)

THE EVIDENCE STUDY SERIES

The EVIDENCE STUDIES were originally planned as a means of gathering evidence bearing upon various legal issues which arose under the National Industrial Recovery Act.

These studies have value quite aside from the use for which they were originally intended. Accordingly, they are now made available for confidential use within the Division of Review, and for inclusion in Code Histories.

The full list of the Evidence Studies is as follows:

- | | |
|-------------------------------------|---|
| 1. Automobile Manufacturing Ind. | 23. Mason Contractors Industry |
| 2. Boot and Shoe Mfg. Ind. | 24. Men's Clothing Industry |
| 3. Bottled Soft Drink Ind. | 25. Motion Picture Industry |
| 4. Builders' Supplies Ind. | 26. Motor Bus Mfg. Industry (Dropped) |
| 5. Chemical Mfg. Ind. | 27. Needlework Ind. of Puerto Rico |
| 6. Cigar Mfg. Industry | 28. Painting & Paperhanging & Decorating |
| 7. Construction Industry | 29. Photo Engraving Industry |
| 8. Cotton Garment Industry | 30. Plumbing Contracting Industry |
| 9. Dress Mfg. Ind. | 31. Retail Food (See No. 42) |
| 10. Electrical Contracting Ind. | 32. Retail Lumber Industry |
| 11. Electrical Mfg. Ind. | 33. Retail Solid Fuel (Dropped) |
| 12. Fab. Metal Prod. Mfg., etc. | 34. Retail Trade Industry |
| 13. Fishery Industry | 35. Rubber Mfg. Ind. |
| 14. Furniture Mfg. Ind. | 36. Rubber Tire Mfg. Ind. |
| 15. General Contractors Ind. | 37. Silk Textile Ind. |
| 16. Graphic Arts Ind. | 38. Structural Clay Products Ind. |
| 17. Gray Iron Foundry Ind. | 39. Throwing Industry |
| 18. Hosiery Ind. | 40. Trucking Industry |
| 19. Infant's & Children's Wear Ind. | 41. Waste Materials Ind. |
| 20. Iron and Steel Ind. | 42. Wholesale & Retail Food Ind. (See No. |
| 21. Leather | 43. Wholesale Fresh Fruit & Veg. 31) |
| 22. Lumber & Timber Prod. Ind. | |

In addition to the studies brought to completion, certain materials have been assembled for other industries. These MATERIALS are included in the series and are also made available for confidential use within the Division of Review and for inclusion in Code Histories, as follows:

- | | |
|------------------------------------|--|
| 44. Wool Textile Industry | 49. Household Goods & Storage, etc. (Dropped) |
| 45. Automotive Parts & Equip. Ind. | 50. Motor Vehicle Retailing Trade Ind. (Dropped) |
| 46. Baking Industry | 51. Retail Tire & Battery Trade Ind. |
| 47. Canning Industry | 52. Ship & Boat Bldg. & Repairing Ind. |
| 48. Coat and Suit Ind. | 53. Wholesaling or Distributing Trade |

L. C. Marshall
Director, Division of Review

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AUTOMOBILE MANUFACTURING INDUSTRY

Foreword

The data appearing in this report come, in the main, from the following sources: the National Automobile Chamber of Commerce; the Code Authority (Automobile Manufacturers' Association); the Bureau of the Census; the trade journals, Automotive Industries and Automobile Topics; The Automobile Industry, by Ralph C. Epstein; and the Research and Planning Division, NRA. The National Automobile Chamber of Commerce is a trade association which publishes statistics in an annual booklet, Automobile Facts and Figures. The National Automobile Chamber of Commerce changed its name in 1935 to the Automobile Manufacturers Association, and this association constituted the Code Authority for the Industry.

No information has been assembled for the section on Trade Practices which forms Part V in the "Outline for Collection of Evidence." Fragmentary material which falls under Part VI of the Outline is therefore presented as Chapter V in this report.

The differences between the Code and Census definitions of this Industry are explained in Chapter I.

Chapter I

THE NATURE OF THE INDUSTRY

Definitions of the Industry

The Code defines the Automobile Industry as follows:

"The term 'Industry' as used herein includes the manufacturing and assembling within the United States of motor vehicles and bodies therefor, and component and repair parts and accessories by manufacturers or assemblers of motor vehicles.

"The term 'motor vehicles' as used herein means automobiles, including passenger cars, trucks, truck tractors, busses, taxicabs, hearses, ambulances, and other commercial vehicles for use on the highway, excluding motorcycles, fire apparatus, and tractors other than truck tractors."

The Census of Manufactures for 1931 gives the following definition for the "Motor Vehicle" Industry:

"The classification 'Motor Vehicles' applies to all manufacturing establishments whose principal products are 4-wheeled or 6-wheeled motor-propelled (internal-combustion or electric) steerable vehicles, except industrial trucks. Establishments engaged primarily in the manufacture of motor-propelled fire apparatus, street sweepers, road oilers, etc., are also classified in this industry." (Manufacturers of motorcycles are classified in the Motorcycles, Bicycles and Parts Industry.)

In addition, the Census of Manufactures has a separate industry classification "Motor-Vehicle Bodies and Motor-Vehicle Parts," which includes establishments engaged in the manufacture of bodies and parts either for sale as such or for transfer to motor-vehicle manufacturing establishments. Thus, if an automobile-manufacturing company manufactured its parts and bodies in one plant and assembled these bodies and parts into automobiles in another plant, the Census would include the first plant and its employees, payrolls, etc., in the Motor-Vehicle Bodies and Parts Industry, and the second plant in the Motor Vehicle Industry.

It can thus be seen that the Census classification "Motor Vehicles" and the Code classification are not coextensive. The Census data on "Motor Vehicles" do not include separate plants engaged in the manufacture of bodies and parts even though they are owned and operated by automobile manufacturers. Consequently, Census figures on number of plants, wage earners, and wages understate the size of the Automobile Manufacturing Industry as defined by the Code. On the other hand, the Census material includes information on fire apparatus, street sweepers, road oilers, etc., but the total volume of production in these categories is incidental. Except for the inclusion of these comparatively minor groups, however, Census data on value and volume of production can probably be considered as applicable to the Industry as defined by the Code, since the value of all bodies and parts

would be included in the value of the finished motor vehicles, regardless of whether they were produced by plants classified in the "Motor Vehicle" or "Motor-Vehicle Bodies and Motor-Vehicle Parts" Industries.

Origin and Growth of the Industry

The period from 1890 may be said to have witnessed the origin of the industry in a commercial sense. From an examination of Census figures made by the Automobile Manufacturers Association, it is stated that there were but four automobiles manufactured in the United States in 1895. The subsequent expansion of the industry is indicated in Table I.

TABLE I

Production, Wholesale Value, and Registration of
All Cars and Trucks, for Specified Years

Year	Production (No. of Units)	Wholesale Value <u>a/</u> (in Millions)	Number of Registrations
1900	4,192	\$ 4.9	8,000
1905	25,000	40.0	78,000
1910	187,000	225.0	468,500
1915	969,300	701.8	2,445,666
1920	2,227,349	2,232.4	9,231,941
1925	4,427,800	3,015.2	19,937,274
1929	5,621,715	3,576.6	26,501,443
1931	2,472,359	1,426.7	25,832,884
1932	1,431,367	793.0	24,115,129
1933	1,986,208	987.4	23,827,290

Source: National Automobile Chamber of Commerce, Automobile Facts and Figures, (1934 Edition)

a/ These figures are lower than those shown in the discussion of "Value of Products" and in Table XIII below. The difference is in part, at least, due to the inclusion in the Census figures in the latter table of the value of goods made as secondary products of the Motor Vehicle Industry and also to the inclusion of the value of fire apparatus, etc

For the year 1934, the Automobile Manufacturers Association estimated that factory sales of cars and trucks totaled 2,753,831 units, having a whole-sale value of \$1,470,431,634.

The important position which the Industry has come to occupy in the national economy may be judged from data contained in the United States Summary of the Retail Census, which indicated that sales of the motor vehicle retailing trade which were \$6,407,512,000 in 1929 and \$2,127,720,000 in 1933 accounted for 13.0 per cent and 8.5 per cent of total retail sales of the nation in the respective years.

During its period of growth and in its majority the Industry has displayed characteristics which are now inevitably associated with it. Of these,

the most striking is the small number of separate enterprises comprising it. This feature is a natural result of the very large investment required for mass production of completed units whose cost runs into hundreds of dollars. A consequence of this concentration of production into the hands of a few, whose individual products are well-recognized, has been the development of a specialized mechanism of distribution, the dealer system, which has served as a model in the formation of similar methods adopted by many other industries. Under this system each manufacturer has a group of representatives in every state, usually handling his own product exclusively. The welfare of the group is so bound up with that of the manufacturers that a frequently-used gauge of the prospects of any manufacturer is the increase or decrease in the number of dealers handling his make of car.

Number of Companies

The total number of companies which reported to the Automobile Manufacturers Association under the Code for the Automobile Manufacturing Industry is shown by states in Table II.

TABLE II

Number of Companies, 1934

State	September, 1934
U. S. Total	75 <u>a/</u>
California	3
Colorado	1
Illinois	6
Indiana	6
Maryland	1
Massachusetts	1
Michigan	21
New Jersey	2
New York	9
North Carolina	1
Ohio	10 <u>b/</u>
Pennsylvania	8 <u>c/</u>
Texas	1
Washington	1
Wisconsin	4

Source: Code Authority (Automobile Manufacturers Association).

- a/ The number of manufacturers included in the Census classification "Motor Vehicles" in 1933 was 90 (counting the General Motors Organization as 6). It is believed that the difference between the Census and Code Authority figures is in part accounted for by the inclusion of companies manufacturing fire apparatus, etc. in the former. Also the number of companies may have decreased between 1933 and 1934.

- b/ International Harvester headquarters are in Chicago, but since its biggest plant is in Springfield, Ohio, it is counted in Ohio.
- c/ Mack Trucks headquarters are in New York but since its largest plant is in Allentown, Pennsylvania, it is counted in Pennsylvania. It also has two plants in New Jersey but these were not counted.

Number of Plants, by States

Table III gives the total number of plants in principal producing states. In the Code Authority tabulation, when a company has more than one manufacturing unit in the same city, the group of units is shown in Table III as one plant.

The differences between the figures from the Census and Code Authority are believed ascribable to differences in the classifications of plants as pointed out in the Foreword and in the footnotes of Table III.

TABLE III

Number of Plants in Principal States

State	Number of Plants, as Reported by				
	Census of Manufactures			Code Authority	
	1929	1931	1933	September 1933 a/	September 1934 a/
U. S. Total	244	178	122b/	170b/	173
California	23	13	9	8	8
Illinois	19	14	10	8	8
Indiana	15	15	9	11	11
Michigan	40	29	24	28	27
New Jersey	c/	c/	c/	6	6
New York	18	18	14	16	16
Ohio	35	25	14	18	19
Pennsylvania	14	13	8	11	13
Texas	c/	c/	c/	8	8
Wisconsin	15	12	7	7	7
Other States	65	39	27	49	50

Source: Data for 1929, 1931 and 1933 from Census of Manufactures, "Motor Vehicles;" for September 1933 and 1934 from Code Authority (Automobile Manufacturers Association).

- a/ Number of plants refers to those owned by companies reporting to the Code Authority, (See Table II).
- b/ The apparent discrepancy between the two 1933 figures is probably due to the fact that the Census classification does not include separate plants engaged wholly in the manufacture of bodies or parts even though owned and operated by automobile manufacturers. On the other hand, it includes manufacturers of fire apparatus, etc., who were not covered by this Code.
- c/ Not shown separately; included in "Other States."

Capital Invested

Capital invested in the Industry serves as a further gauge of its size and growth. Estimates relative thereto are presented in Table IV.

TABLE IV

Estimates of Capital Invested in the
Automobile Manufacturing Industry, 1919 - 1933 a/

Year	Cars	Trucks	Total
1919	\$ 784,660,761	\$230,782,577	\$1,015,443,338
1920	897,953,600	306,425,000	1,204,378,600
1921	1,134,166,000	289,334,000	1,423,500,000
1922	1,154,103,335	302,546,620	1,456,649,955
1923	1,281,364,300	290,358,100	1,571,722,400
1924	1,373,372,426	317,677,686	1,691,050,112
1925	1,503,290,062	384,738,748	1,888,028,810
1926	1,646,589,759	442,908,566	2,089,498,325
1927	1,643,989,116	436,668,548	2,080,657,664
1928	1,578,021,207	387,289,301	1,965,310,508
1929	1,518,714,814	437,972,847	1,956,687,661
1930	1,442,275,653	438,532,580	1,880,808,223
1931	1,215,200,000	380,600,000	1,595,800,000
1932	1,118,600,000	371,300,000	1,489,900,000
1933	1,012,548,000	336,418,000	1,348,966,000

Source: National Automobile Chamber of Commerce, Automobile Facts and Figures, (1934 Edition).

a/ These figures represent net tangible assets of United States motor vehicle manufacturers, and do not include parts, accessory, body and tire manufacturers. Net tangible assets are determined by deducting good will and current liabilities from total assets.

Number of Failures

It is to be expected that an industry showing such large increases in volume of sales would attract many new firms; likewise it may be expected that severe competition would result in many failures. A record of companies entering and leaving the Industry for the period from 1902 to 1926 is given in Table V. It should be noted that this tabulation covers only the passenger-automobile industry.

TABLE V

Number of Companies Entering, Leaving,
and Remaining in the Passenger Automobile Industry,
1902 - 1926.

<u>Year</u>	<u>Number of En- trances</u>	<u>Number of Exits</u>	<u>Number of Companies Remaining</u>	<u>Year</u>	<u>Number of En- trances</u>	<u>Number of Exits</u>	<u>Number of Companies Remaining</u>
1902	--	---	12	1915	10	6	75
1903	13	1	24	1916	6	7	74
1904	12	1	35	1917	8	6	76
1905	5	2	38	1918	1	6	71
1906	6	1	43	1919	10	4	77
1907	1	0	44	1920	12	5	84
1908	10	2	52	1921	5	1	88
1909	18	1	69	1922	4	9	83
1910	1	18	52	1923	1	14	70
1911	3	2	53	1924	2	15	57
1912	12	8	57	1925	0	8	49
1913	20	7	70	1926	1	6	44
1914	8	7	71				

Source: Epstein, Ralph C., The Automobile Industry (1928) Chart 28.

Of particular significance is the decline from 1921 to 1926 in the number of concerns remaining in the industry. Fully developed data of identical character for the years 1927 to 1934 are not available; it may be noted, however, that it was during this period that makes previously enjoying considerable public favor disappeared from the market.

According to Dun and Bradstreet there were 8 failures in the Automobile Manufacturing Industry in 1934. No failures were recorded for the first three months of 1935.

Value of Products

Reports of the Census of Manufactures show that the value of products of the Motor Vehicle Industry declined from \$3,722,800,000 in 1929 to \$1,568,000,000 in 1931 and still further to \$1,097,000,000 in 1933. As previously stated, it is believed that the Census figures on value may be considered as approximately applicable to the Industry as defined by the Code.

Volume of Production

The volume of production of passenger cars and motor trucks, as measured by new car registrations, is shown for leading members of the Industry in Tables VI and VII. New car registration in 1934 showed a substantial increase over 1933. The information on passenger cars indicates, however, that despite this improvement, the number of registrations in 1934 was less than half the 1929 registrations. The improvement has been very uneven among

different members of the Industry; a number of the smaller producers - for example, Willys Overland showed in 1934 only a small fraction of their 1929 registrations.

TABLE VI

New Passenger Car Registrations for
Specified Members of the Industry

Member of Industry	1929	1931	1933	1934
Total	4,025,300	1,919,560	1,493,794	1,888,557
General Motors	1,315,700	830,390	646,557	752,375
Ford Motor Co.	1,362,400	535,240	313,225	532,589
Chrysler Motors	356,900	229,830	385,666	432,195
Studebaker Motors <u>a/</u>	94,400	51,360	38,394	43,300
Hudson Motor Co.	262,900	62,100	38,777	59,817
Graham Paige	62,600	19,320	10,128	12,887
Nash Motor	108,800	39,600	11,353 <u>b/</u>	23,616
Willys Overland	206,700	51,650	15,314	6,576
Hupmobile Motor Co.	45,900	17,530	6,726	6,566
Packard Motor Co.	46,200	16,350	9,081	6,552
Auburn Motor Corp.	19,300	31,130	5,038	5,536
Reo Motor Co.	17,900	6,800	3,623	3,854
American Austin	---	2,960	3,675	1,057
Continental Motor Co.	---	---	3,310	953
Franklin Motor Co.	11,100	3,900	1,329	360
All Others	104,500	21,400	1,598	324

Source: Chilton Company, Inc., Automotive Industries, February 27, 1932, page 176, and February 9, 1935, page 176.

a/ Pierce Arrow is member of Studebaker Corp.

b/ LaFayette is not included for 1933.

TABLE VII

New Truck Registrations for
Specified Members of the Industry, 1933 and 1934.

Member of Industry	1933	1934
Total	245,869	403,886
General Motors	106,432	167,956
Ford Motor	62,397	128,250
Chrysler Motor	28,034	48,252
International Harvester	26,658	31,555
Diamond T	4,139	5,440

TABLE VII (Cont'd)

Member of Industry	1933	1934
Reo Motor Co.	3,042	5,035
White Truck Co.	1,384	3,963
Federal Truck Co.	1,360	1,962
Mack Truck Co.	1,652	1,830
Studebaker Truck Co.	1,872	1,697
Brockway	875	1,213
Auto-Car Co.	1,127	1,139
Stewart	684	736
Indiana	1,252	729
American Austin	1,053	494
All Others	3,858	3,635

Source: Chilton Company, Inc., Automotive Industries, February, 1935, page 176.

Competition

The nature of the competition affecting the Industry is in some respects highly individual. In the first place, competition is entirely within the Industry -- the automobile has no real competitor as a means of personal, quick, and ever-ready transportation; and it is doubtful that, as instruments of pleasure, the rivalry offered by water craft, airplanes, musical instruments, etc., has any significant effect on sales volumes. As a means of freight transportation, the importance of the automobile is not fully developed; certainly, at present, the incursion into that field is being made by it rather than against it.

Competition within the Industry is, again, almost entirely among domestic manufacturers. There are, to be sure, efforts by foreign makers--notably in the expensive passenger car field--to sell in the United States. The volume of their sales is so small as to be immaterial; according to Automobile Facts and Figures, ^{1/} the number of motor vehicles imported into the United States in 1929 was 750 and in 1933, 534.

Competition within the Industry is extremely keen, and since the product of each manufacturer is readily identifiable, methods of competition involve means of direct and swift appeal to the consumer. Thus, a price change on the part of one producer is likely to lead to other revisions, not only for cars in the same price class but also in immediately higher or lower price brackets. It is to be noted in this connection that the Industry does not establish varying prices for different geographical areas within the country; the only variable element in the cost to the purchaser is the cost of transportation from point of shipment to point of delivery.

^{1/} Editions of 1929 and 1934.

Chapter II

LABOR STATISTICS

Number of Employees

Factory employment in the Automobile Industry declined from an average of more than 425,000 workers in 1929 to less than 200,000 in 1933. Three employment series are presented in Table VIII. The series in the second column has been obtained from reports from practically 100 per cent of the manufacturers operating under the Code for the Automobile Manufacturing Industry. Since this series is not available prior to September 1933, a series based on thirteen of the currently reporting companies who could furnish pre-Code data are presented in the first column. The figures in the third column have been compiled by the National Automobile Chamber of Commerce. Although the April 1934 figure of the Chamber is about 40,000 less than the April figure in the second column, it is believed that in a general way the Chamber figures may be considered reliable indicators of employment prior to 1933.

Seasonality of Employment

The irregularity of employment in the Automobile Industry which results in part from the introduction of new models in the early spring months is one of the chief problems of the industry.

As shown in Table VIII above, during the year 1934, the number of factory employees fluctuated between 208,188 in October to 368,565 in April. The suggestion has been made that "regularization can be substantially achieved by fall announcement of new models and a fall date for the Automobile show." 1/

Employees in Related Industries

Table IX is presented to indicate in a broader way the importance of the Automobile Industry as a factor in national employment. A significant fact brought out by this table is that the 190,027 workers directly employed in 1933 by the Automobile Manufacturing Industry formed only a small fraction of the total workers associated with the automobile and related industries.

1/ Research and Planning Division, NRA, "Preliminary Report on Study of Regularization of Employment and Improvement of Labor Conditions in the Automobile Industry"
(January 23, 1935), Page 10 of Summary.

TABLE VIII

EMPLOYMENT AND PAYROLLS
IN THE INDUSTRY AS DEFINED BY THE CODE

Period	Number of Factory Employees		Total e/ d/ (Thousands)	Total e/ d/ (Thousands)	Total Weekly Payroll Entire Industry b/ d/	Total Annual Wage e/ d/
	Thirteen Companies a/	Entire Industry e/				
1929-Average	379,185 e/					\$775,479
1931-Average	236,961 e/			427,459		397,207
1933-Average	165,035 e/			270,464		233,508
1933-September	185,698	223,194			\$4,623	
October	156,962	190,594			3,452	
November	148,945	186,612			3,269	
December	177,684	216,981			4,267	
1934-January	220,319	264,287			5,670	
February	262,313	309,405			7,529	
March	290,080	337,938			9,011	
April	328,541	368,565			9,952	
May	303,768	353,858	323,610		8,230	
June	277,629	324,168			7,888	
July	255,326	297,991			6,908	
August	235,453	274,895			6,027	
September	207,723	245,440			5,231	
October	180,516	208,188			4,638	
November	180,462	215,697			4,874	
December		288,250			7,393	
1935-January		344,128			9,515	
February		371,506			10,616	
March		377,648			11,070	
April		379,714			11,302	

Source: As indicated in footnotes

a/ The figures in this column are for thirteen companies (or groups of companies) reporting under the Automobile Code which also supplied pre-Code data and are taken from Research and Planning Division, NRA, Preliminary Report on Study of Regularization of Employment and Improvement of Labor Conditions in the Automobile Industry, Appendix A, (January 23, 1935) Exhibit 4. Data cover production employees and auxiliary (maintenance and service) employees.

b/ Employment and payroll data beginning September 1933, have been compiled by the Division of Research and Planning, NRA, from monthly reports submitted by individual automobile manufacturers through the Automobile Manufacturer's Association. For all practical purposes 100 per cent of the automobile manufacturing concerns have submitted reports each month. Data cover production employees and auxiliary (maintenance and service) employees.

c/ National Automobile Chamber of Commerce, Automobile Facts and Figures, (1934 Edition). Figures cover United States motor vehicle manufacturers only; they do not include, parts, accessory, body or tire factories.

d/ Average weekly values of monthly data. Data cover production employees and auxiliary (maintenance and service) employees.

e/ Average monthly figures.

TABLE IX

EMPLOYMENT IN THE AUTOMOTIVE AND RELATED INDUSTRIES,
BY KIND OF EMPLOYEES, 1933

Kind of Employees	Number of Workers
Employed directly:	
Motor Vehicle Factory Workers	190,027
Tire, parts and accessory factory workers	200,000
Dealers and salesmen, motor vehicles, parts, accessories, tires	290,000
Garage and repair shop employees	405,000
Bus, Taxi and private chauffeurs	450,000
Truck drivers	1,500,000
Automobile financing, insurance, advertising and miscellaneous	12,000
Total employed directly	3,047,027
Employed indirectly:	
Gasoline refining and retailing	420,000
Iron and steel workers	60,000
Non-ferrous metal workers	10,000
Railroad and steamship workers	50,000
Lumber and woodworkers	5,000
Electric power and fuel workers	3,000
Highways	900,000
Miscellaneous other raw material supplies	30,000
Total employed indirectly	1,478,000
Grand Total	4,525,027

Source: National Automobile Chamber of Commerce, Automobile Facts and Figures, (1934 Edition),

Total Annual Wages

The only figures available on total annual wages for the Industry as defined by the Code are those from the National Automobile Chamber of Commerce shown in Table VIII. These figures indicate that total wages have declined from \$775,479,000 in 1929 to \$233,508,000 in 1933. As has been pointed out in the discussion of employment, it is believed that the Chamber figures give, in general, an accurate picture of conditions.

Total weekly payrolls for the entire Industry are shown in Table VIII. Since September 1933 the Industry's total weekly payroll has ranged between \$3,269,000 in November 1933 and \$11,302,000 in April 1935.

Per Cent Labor is of Value of Products

In 1929 the wage bill of \$775,479,000 formed approximately 22 per cent of the estimated wholesale value of product of \$3,576,600,000. In 1933 wages formed slightly less than 24 per cent of the total value (\$233,508,000 out of \$987,400,000). Some caution should be exercised in the use of these

figures since it is not possible to determine precisely the comparability of the wage and value data. 1/

Hourly Wage Rate

From January 1934, average hourly earnings rose from 63.8 cents to 74.4 cents in October, 1934. During the first four months of 1935 hourly earnings ranged between 71.6 and 72.8 cents. These data, which are shown in Table X, are not available prior to September 1933 nor are they available for males and females separately.

Hours Worked Per Week

As shown in Table X, the working week has ranged between 26.7 hours in November 1933 and 40.9 in April 1935. Comparable data for males and females separately are not available.

Weekly Earnings

Weekly earnings are closely associated with the length of the working week and tend to rise as it lengthens. In the Automobile Industry weekly earnings have ranged from \$17.57 in November 1933 to \$29.76 in April 1935. (See Table X). The Automobile Industry in April 1935 paid higher average weekly earnings than any other industry shown in the Bureau of Labor Statistics industry classification which appears in the Trend of Employment.

Employees Under 16 Years of Age

Children have not been employed in the Automobile Industry in significant numbers. The Census of Occupations showed only 112 children 10 to 15 years old employed in automobile factories in 1930. 2/ More recent information is not available.

1/ The National Automobile Chamber of Commerce figures on wholesale value were used rather than the Census value of products as it was thought these figures would compare more closely with the wage data which were also estimated by the Chamber.

2/ Fifteenth Census of the United States: 1930, Occupation Statistics, "United States Summary," p. 88.

TABLE X

AVERAGE HOURLY AND WEEKLY EARNINGS AND HOURS WORKED PER
WEEK BY MONTHS, SEPTEMBER 1933 - APRIL 1935

Month	Average per Employee ^{a/}		Weekly Hours
	Hourly Earnings	Weekly Earnings	
1933			
September	\$0.656	\$20.72	31.6
October	.657	18.11	27.6
November	.659	17.57	26.7
December	.643	19.48	30.3
1934			
January	.638	21.45	33.6
February	.650	24.34	37.4
March	.677	26.67	39.4
April	.724	27.01	37.3
May	.725	23.26	32.1
June	.733	24.33	33.2
July	.733	23.18	31.6
August	.741	21.92	29.6
September	.741	21.31	28.8
October	.744	22.28	30.0
November	.743	22.60	30.4
December	.727	25.65	35.3
1935			
January	.717	27.65	38.6
February	.716	28.58	39.9
March	.721	29.31	40.6
April	.728	29.76	40.9

Source: Computed by the Division of Research and Planning, NRA, from monthly reports submitted by individual automobile manufacturers through the Automobile Manufacturers Association. For all practical purposes 100 per cent of the automobile manufacturing concerns submitted reports each month.

^{a/} Covers production employees and auxiliary (maintenance and service) employees.

Employment and Wages in Principal States

Incomplete information on the number of employees in leading states and their total wages has been assembled in Table XI. This table is based on Census data for the classification "Motor Vehicles" which are believed to cover only about half the employees shown in Table VIII. ^{1/} It is presented merely to indicate the concentration of the Industry in Michigan, Ohio, Indiana, and a few other states.

TABLE XI

WAGE EARNERS AND WAGES IN THE "MOTOR VEHICLES" INDUSTRY,
BY PRINCIPAL STATES, 1929, 1931, 1933

State	Number of Wage Earners			Total Annual Wages		
	1929	1931	1933	1929	1931	1933
				(Millions)		
U. S. Total	226,116	134,866	97,969	\$366.6	\$156.7	\$103.8
California	5,443	3,316	2,121	7.9	4.7	2.2
Illinois	3,234	2,244	2,268	5.0	3.0	a/
Indiana	20,573	12,507	7,033	30.6	14.4	6.6
Michigan	108,796	64,077	59,724	188.8	75.2	66.6
New York	10,603	6,016	3,286	17.3	8.1	a/
Ohio	28,727	14,932	6,938	43.9	14.9	6.6
Pennsylvania	7,731	5,853	4,942	11.7	7.1	4.5
Wisconsin	10,241	5,856	2,825	16.2	5.6	a/
All Other States	30,768	20,065	8,732	45.1	23.8	17.2

Source: Census of Manufactures, "Motor Vehicles."

a/ Data not available.

^{1/} For discussion of this difference, see Chapter I, section on "Definitions of the Industry."

Chapter III

MATERIALS: RAW AND SEMI-PROCESSED

Cost of Materials

The amounts spent by the Automobile Industry for materials, fuel, and purchased electric energy may be placed at approximately \$2,401,000,000 in 1929, \$1,044,000,000 in 1931, and \$767,000,000 in 1933, according to the Census of Manufactures reports on the "Motor Vehicles" Industry.

Although the Code includes the making of bodies and parts not reported under this latter classification, but rather under "Motor Vehicle Bodies and Motor Vehicle Parts," the fact that the cost of materials going into those bodies and parts which emerge finally as vehicles would be included in the total cost of materials reported by the vehicle manufacturers means that the data reported by them can be considered roughly applicable to the Industry as defined by the Code. The qualification already noted in the use of Census data because of their inclusion of fire apparatus, etc., applies to the cost of materials.

The importance of the industry as a factor in the consumption of raw, semi-processed and fully-processed materials may be judged from Table XII.

TABLE XII
MATERIALS USED IN THE AUTOMOBILE
MANUFACTURE AND REPAIR, 1933

Material	Unit (In Thousands)	Amount Used in Manu- facturing and Repairs	Per Cent of Total Produc- tion Used by Automobile Industry
Steel a/	gross tons	3,250.0	19.2
Iron, malleable	tons	174.0	55.0
Gray iron	tons	397.3	9.3
Rubber	long tons	293.0	73.0
Plate glass	square feet	34,802.5	40.0
Lumber, hardwood	board feet	308,990.0	14.0
Leather, upholstery	square feet	6,805.0	54.0
Aluminum	tons	10.0	23.5
Copper	tons	64.0	15.4
Tin	long tons	7.2	11.1
Lead	tons	156.0	35.4
Zinc	tons	25.0	7.1
Nickel	pounds	6,750.0	24.0
Cotton b/	bales	431.5	6.9
Mohair	pounds	3,500.0	22.0
Lumber, softwood	board feet	104,368.0	-
Cloth, upholstery b/	yards	22,050.0	-
Paint and Lacquer b/	gallons	6,685.0	-
Hair and Padding b/	pounds	25,257.0	-

Source: National Automobile Chamber of Commerce, Automobile Facts and Figures, (1934 Edition) except where otherwise indicated.

a/ Figures from Iron Age. Do not include tonnage sold by steel jobbers to repair shops or steel sold to automobile manufacturers in the form of bolts, nuts, and rivets.

b/ For use in manufacturing motor vehicles in the United States only.

The usefulness of the figures presented in Table XI is somewhat lessened by the fact that they include materials used in repair work. The

exact proportion of these materials going into the manufacture of new cars is indeterminable.

Source of Raw Materials.

The domestic sources of raw materials used in the Industry are indicated by the accompanying map of the United States which shows the raw material contributed by each state. Map I, in conjunction with Tables III above and XVIII below, gives striking evidence of the manner in which the Industry draws its materials from every corner of the country, carries on its manufacturing processes in comparatively few states, and distributes its finished product throughout the United States.

Amounts Spent for Machinery, Principal Materials,
and Fuel

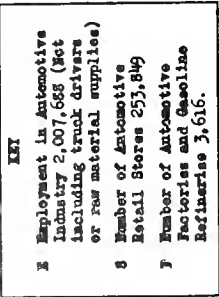
Data are not available on the amounts spent by the Automobile Industry for various raw materials nor for equipment. The Census of Manufactures report on "Motor Vehicles" for 1929 subdivides the total of \$2,401,-511,763 for materials, fuel and purchased energy into \$2,379,498,089 for materials and \$22,013,674 for fuel and purchased energy. A similar allocation of costs is not given for 1931 and 1933.

Largest purchaser of several commodities

Employment. Direct and Indirect. over 4,000,000 Persons

Employment. Direct and Indirect. over 4,000,000 Persons

— One out of every 11 "gainful workers"



2

Chapter IV

PRODUCTION AND DISTRIBUTION

Value and Volume of Production in Principal States

Between 1929 and 1933 the relative importance of Michigan in the Automobile Industry, as measured by value of products, has increased. Computations made from the figures in Table XII show that in 1929 and 1931, Michigan produced between 40 and 42 per cent of the total value of products in this Industry and that in 1933 the proportion has risen to almost 54 per cent. It should be emphasized that this increase is merely relative. Every state listed in Table XIII, including Michigan, has experienced severe declines in value of goods produced.

A corresponding distribution of the number of vehicles produced in these states is not available.

Shipments Across State Lines

Complete information on interstate shipments of automobiles cannot be shown, but the figures assembled in Table XIV are indicative of the interstate movement of the products of the Industry. This table deals only with Chevrolets, but it shows that in 1934 more than 350,000 new Chevrolets were registered in states which had neither Chevrolet factories nor assembly plants. Similar tables on other leading makes would unquestionably present the same general picture.

TABLE XIII

VALUE OF PRODUCTS BY PRINCIPAL STATES
1929, 1931, AND 1933

State	Value of Products (In Millions)		
	1929	1931	1933
U. S. Total	\$3,722.8	\$1,568.0	\$1,097.0
California	138.3	67.7	46.1
Illinois	62.4	25.3	a/
Indiana	208.2	114.5	45.9
Michigan	1,549.7	635.9	583.3
New York	232.3	153.4	a/
Ohio	387.4	136.6	49.7
Pennsylvania	100.5	41.1	36.2
Wisconsin	219.2	97.2	a/
All Others	824.8	295.9	330.8

Source: Census of Manufactures, "Motor Vehicles."

a/ Data not available, included in "All Others."

TABLE XIV

NEW CHEVROLET REGISTRATIONS, IN STATES HAVING NO
CHEVROLET FACTORIES OR ASSEMBLY PLANTS, 1934

State	Number of Reg- istration	State	Number of Reg- istration
Total	358,939		
Alabama	10,680	Nevada	665
Arizona	1,906	New Hampshire	2,255
Arkansas	6,059	New Jersey	15,495
Colorado	5,556	New Mexico	2,261
Connecticut	5,909	North Carolina	16,824
Delaware	1,511	North Dakota	2,790
District of Columbia	4,246	Oklahoma	13,530
Florida	7,848	Oregon	3,688
Idaho	2,364	Pennsylvania	35,934
Illinois	27,863	Rhode Island	2,928
Indiana	14,574	South Carolina	7,207
Iowa	13,126	South Dakota	2,569
Kansas	11,077	Tennessee	9,637
Kentucky	8,310	Texas	37,997
Louisiana	8,560	Utah	1,939
Maine	3,123	Vermont	1,225
Massachusetts	16,337	Virginia	10,408
Minnesota	12,639	Washington	5,619
Mississippi	6,848	West Virginia	5,993
Montana	2,897	Wyoming	1,462
Nebraska	7,088		

Source: Automobile Topics, February 16, 1935, pp. 106-107.

Value and Volume of Products Exported

The decline which began in 1930 in both the number and value of motor vehicles exported from the United States was checked in 1933. As can be seen from Table XV, 1933 showed noticeable improvement over 1932, but was nevertheless much below the levels of 1931 and the two preceding years.

TABLE XV

VALUE AND VOLUME OF MOTOR VEHICLES EXPORTED,
1929 - 1933

Year	Value (Thousands)		Number a/	
	Passenger Cars	Motor Trucks	Passenger Cars	Motor Trucks
1929	\$239,626	\$113,063	451,079	283,132
1930	110,356	56,924	247,764	157,951
1931	53,048	26,302	134,048	107,509
1932	25,633	12,211	72,889	47,350
1933	33,945	20,691	98,115	78,428

TABLE XV (Continued)

Source: National Automobile Chamber of Commerce
Automobile Facts and Figures (1934 Edition)

a/ U. S. exports including foreign assemblies.

Advertising

Partial expenditures for national radio and magazine advertising by the Automotive Industries 1/ are shown in Table XVI. It will be noted that the amounts spent for radio broadcasting were higher in 1933 and 1934 than in 1929. Expenditures for national magazine advertising in 1934 were only about half as high as in 1929. The data on radio advertising are for the National Broadcasting Company and the Columbia Broadcasting System and include only national advertising, embracing the various networks or combinations thereof. Also, the figures include only the cost of the facilities and not that of the talent.

In addition to the radio and magazine advertising the Automobile Industry uses a large amount of space in local newspapers, but the volume and cost of this is not known.

TABLE XVI

EXPENDITURES FOR NATIONAL RADIO AND MAGAZINE ADVERTISING BY THE AUTOMOTIVE INDUSTRIES a/

Year	Amount Spent On	
	Radio Broadcasting <u>b/</u>	Magazine Advertising <u>c/</u>
(Thousands)		
1929	\$1,721	\$26,341
1931	1,314	17,648
1933	2,318	9,321
1934	3,770	13,760

Source: Denney Publishing Company, Inc., New York, as reproduced in the
Survey of Current Business published by the Department of Commerce.

a/ It is not known how closely the groups represented by these figures compare with the groups included under the Code.

b/ The data are for the National Broadcasting Co., (Inc.) and the Columbia Broadcasting System (Inc.), and include only national advertising, embracing the various networks, or combinations thereof. They do not include the records of local broadcasting nor the cost of program talent.

c/ Data represent the grand total cost of all advertising for all classes of national magazines. All space costs are based on advertisers' one time, or single, insertion rate as quoted in "Standard Rate and Data Service," and do not make allowance for longer contract rates.

1/ It is not known how closely the groups represented by these figures compare with the groups included under the Code.

Trade Marks

The entire production of the Automobile Industry is advertised and sold on a national scale under well established names or "makes."

Mode of Shipment

Modes of shipping assembled passenger cars and motor trucks from factories and assembling plants in the United States, including exports, are shown in Table XVII.

TABLE XVII

SHIPMENTS a/ OF ASSEMBLED PASSENGER CARS AND MOTOR TRUCKS,
BY MODE OF TRANSIT

Year	Machines Delivered By Railroad (Carloads of Machines)	Machines Delivered Overland	Machines Shipped by Boat
1929	733,631	1,958,738	199,576
1931	283,858	1,050,545	85,609
1932	130,820	706,977	51,103
1933	198,287	930,303	126,258

Source: National Automobile Chamber of Commerce, Automobile Facts and Figures (1934 Edition).

a/ From factories and assembling plants in United States, including exports.

The importance of railroad transportation may be underestimated at first glance since the figures are in terms of carloads rather than number of machines. It is true however, that the relative importance of railroad transportation of cars and trucks has diminished since 1929. In 1933 only 27 per cent as many carloads of cars were shipped by rail as in 1929, while comparable figures for overland and boat delivery were 47.5 per cent and 63 per cent, respectively.

Distribution of Products

The most striking characteristic of the system by which automobiles pass from manufacturer to consumer is its control by the manufacturer. The steps in the distribution mechanism are, in essence, from manufacturer to dealer, and from dealer to consumer, although actually most of the cars pass through a factory branch, or a "distributor," or both, between the manufacturer and the dealer. Many variations appear in this organization, but the units comprising it are the same: manufacturer, factory branch, distributor, dealer, consumer. Whatever variation occurs, effective control remains in the hands of the manufacturer. Consequently, dealers all over the nation watch eagerly for sales reports, production reports, and earning statements of manufacturers. for upon the manufacturer's welfare and performance, depends the extension of their dealer franchises.

Volume of Business, by States

The number of retail and wholesale automobile dealers in each state is shown in Table XVIII. At the end of 1933 there was a total of over 102,000 retail outlets and 5,430 wholesale establishments which were scattered over every state in the Union. Preliminary figures for 1934 released by the Automobile Manufacturers Association indicate that the number of retail outlets had increased to almost 106,000 and the number of wholesalers to 5,759. Of the 106,000, 36,900 were classified as car and truck dealers as compared with 35,265 at the end of 1933.

The value of volume of products sold to dealers in each state are not available. However, an indication of the amount of business done in each state can be had from Tables XIX and XX which show respectively the number of new passenger cars and trucks registered in each state in 1933. The largest numbers of registrations of both passenger cars and trucks were in New York. Pennsylvania was second in importance.

TABLE XVII

NUMBER OF RETAIL AND WHOLESALE OUTLETS, BY STATES

State	Retail					Repair Shops	Wholesale
	Total Retail Outlets a/	Dealers Selling			Trucks Exclusively		
		Both Cars and Trucks	Passenger Cars Primarily	Trucks			
U. S. Total	102,469	35,265	34,126	1,139	62,590	5,430	
Alabama	807	279	267	12	500	58	
Arizona	309	106	102	4	201	26	
Arkansas	915	328	317	11	586	40	
California	8,038	1,601	1,540	61	5,766	481	
Colorado	2,106	371	364	7	5,720	61	
Connecticut	1,353	504	490	14	747	99	
Delaware	159	66	62	4	80	9	
District of Columbia	232	62	58	4	147	27	
Florida	1,288	342	342	0	689	99	
Georgia	1,227	436	436	0	739	63	
Idaho	1,495	216	212	4	280	28	
Illinois	6,266	2,147	2,073	74	3,863	316	
Indiana	3,151	1,096	1,087	9	2,095	173	
Iowa	3,290	1,373	1,323	50	1,805	145	
Kansas	2,456	1,035	1,997	38	1,341	107	
Kentucky	1,370	562	545	17	1,740	57	
Louisiana	1,824	293	280	13	491	62	
Maine	856	329	326	3	528	42	
Maryland	961	406	389	17	503	60	
Massachusetts	2,835	960	935	25	1,624	216	
Michigan	4,239	1,534	1,518	16	2,498	199	
Minnesota	3,314	1,313	1,301	12	1,866	104	
Mississippi	3,757	334	326	8	373	41	
Missouri	3,230	1,034	1,014	20	2,072	161	
Montana	3,754	1,297	1,267	10	436	35	
Nebraska	1,573	670	650	20	948	72	
Nevada	186	93	98	0	76	6	
New Hampshire	542	217	210	7	344	30	
New Jersey	3,428	989	935	54	2,139	181	
New Mexico	3,314	118	117	1	194	17	
New York	8,885	2,750	2,607	143	5,672	558	
North Carolina	1,391	515	498	17	870	73	
North Dakota	1,096	524	498	26	531	27	
Ohio	5,730	2,013	1,937	76	3,322	347	
Oklahoma	1,688	602	589	13	988	93	
Oregon	1,394	348	336	12	977	83	
Pennsylvania	8,008	2,968	2,831	137	4,752	403	
Rhode Island	519	148	144	4	321	31	
South Carolina	684	242	238	4	453	30	
South Dakota	1,059	401	380	21	631	24	
Tennessee	1,082	342	330	12	730	61	
Texas	4,440	1,421	1,361	40	3,128	246	
Utah	466	148	144	4	291	30	
Vermont	570	163	175	8	362	21	
Virginia	1,678	581	558	23	1,041	62	
Washington	2,288	530	503	27	1,657	126	
West Virginia	1,191	457	432	25	677	58	
Wisconsin	3,375	1,620	1,591	29	1,698	134	
Wyoming	337	156	153	3	170	8	

Source: Figures from the Chilton Company, as of February 1, 1934, as reproduced in National Automobile Chamber of Commerce, Automobile Facts and Figures, (1934 Edition).

a/ Duplication eliminated.

TABLE XIX

REGISTRATIONS OF NEW PASSENGER CARS, BY STATES, 1933

State	Number of Reg- istrations	State	Number of Registrations
U. S. Total	1,493,794		
Alabama	14,514	Nebraska	16,393
Arizona	3,625	Nevada	1,328
Arkansas	11,626	New Hampshire	6,597
California	98,068	New Jersey	56,438
Colorado	11,739	New Mexico	3,716
Connecticut	24,213	New York	175,763
Delaware	4,119	North Carolina	29,191
District of Columbia	14,375	North Dakota	5,263
Florida	17,924	Ohio	101,213
Georgia	24,119	Oklahoma	28,914
Idaho	3,463	Oregon	10,123
Illinois	85,460	Pennsylvania	121,425
Indiana	40,176	Rhode Island	10,749
Iowa	27,286	South Carolina	14,591
Kansas	24,238	South Dakota	4,849
Kentucky	20,316	Tennessee	19,880
Louisiana	16,300	Texas	80,447
Maine	9,074	Utah	4,704
Maryland	20,193	Vermont	3,774
Massachusetts	63,248	Virginia	22,180
Michigan	85,682	Washington	16,633
Minnesota	30,829	West Virginia	15,326
Mississippi	10,628	Wisconsin	28,308
Missouri	45,773	Wyoming	2,945
Montana	6,056		

Source: Compiled by R. L. Polk and Company, and obtained from the Automotive Division of the Bureau of Foreign and Domestic Commerce.

TABLE XX

REGISTRATION OF NEW COMMERCIAL CARS, BY STATES, 1933

State	Number of Registrations	State	Number of Registrations
U. S. Total	245,869		
Alabama	4,054	Nebraska	2,713
Arizona	1,086	Nevada	233
Arkansas	3,638	New Hampshire	1,783
California	13,788	New Jersey	7,401
Colorado	2,488	New Mexico	1,395
Connecticut	4,246	New York	20,200
Delaware	828	North Carolina	6,597
District of Columbia	1,362	North Dakota	1,107
Florida	4,186	Ohio	11,150
Georgia	5,260	Oklahoma	4,941
Idaho	1,545	Oregon	2,488
Illinois	11,764	Pennsylvania	19,991
Indiana	6,121	Rhode Island	1,598
Iowa	5,449	South Carolina	2,604
Kansas	4,292	South Dakota	996
Kentucky	4,195	Tennessee	3,623
Louisiana	2,882	Texas	13,889
Maine	2,614	Utah	1,568
Maryland	3,818	Vermont	1,311
Massachusetts	9,511	Virginia	5,667
Michigan	9,085	Washington	4,002
Minnesota	5,722	West Virginia	2,988
Mississippi	2,752	Wisconsin	5,411
Missouri	8,535	Wyoming	937
Montana	2,055		

Source: Compiled by R. L. Polk and Company, and obtained from the Automotive Division of the Bureau of Foreign and Domestic Commerce.

Chapter V

GENERAL INFORMATION

General

The foregoing data express quantitatively the mechanism of the Industry. It has been shown how the Industry gathers together at centralized points raw, semi-processed, and fully-processed materials; converts them into completed units; and markets the finished product throughout the nation and in foreign countries. It has also been indicated how great is the concentrated power of a few management groups in the Industry.

Particular manifestations of this power are found in the attitude of the manufacturer toward the dealer, in which there is to be found evidence of considerable nonchalance as to the latter's welfare. This power is also easily discerned in the relationship between the manufacturer and his suppliers, where it has resulted in competition of the most ruthless sort among such suppliers.

Trade Association

A peculiar feature of the Industry is the singularity of its "trade association" activities. There is but one association of importance in the Industry--the Automobile Manufacturers Association--to which all important members of the Industry, with the exception of the Ford Motor Company, belong. It is an outgrowth of the Association of Licensed Automobile Manufacturers, formed in 1903 to regulate the use of the Selden patents. When that Association's influence was lessened in 1911 by court decision regarding the validity of these patents, there developed from its membership the National Automobile Chamber of Commerce. This name was changed early in 1935 to the Automobile Manufacturers Association. It is one of the strongest trade associations in the country and one with whose activities the public is very familiar through its sponsorship of matters of direct public interest.

Labor Organizations

The relationship between labor and management in the Industry has been influenced by the facts that until very recent years there has been a constantly and rapidly increasing gain in the number of workers required, and that the wage scale of the Industry has been high. Furthermore, the physical conditions of plants have been such as to contribute to the comfort of workers to a greater degree than those which characterized many other industries. As a result, labor trouble in the Industry has been rare until recent years, when terrific demands have been put upon the worker as a result of the keen competition between manufacturers. Fortified by Section 7 (a) of the National Industrial Recovery Act, different labor unions have, since its passage, been active in organization work. Their efforts represent the only large scale aggressive action along such lines since 1912, the earlier action having been unsuccessful. At present the three labor organizations of greatest influence in the Industry are: the American Federation of Labor, the Associated Automobile Workers of America, and the Mechanics' Educational Society of America. Of these, the American Federation of Labor claims to have the greatest membership in the Industry.

APR 15 1936

